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# UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,954,214

B2

Pg 1026

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

NOTE

title item

On the ~~face~~ page, in ~~field~~ (56), in "Other Publications", in column 2, line 12, after "229-299" insert -- (1997) --.

In the drawings:

On Sheet 4 of 9, in FIG. 4, please replace "FIG. 4" with the following figure.

FIG. 4

310

```
extern "C" void
LinearToRGBColor( Color *pOut, Color *pIn )
{
    // finer approximation that avoids taking 3 successive
    // square roots: apply one round of N-R to guess cube
    // root of x*sqrt(sqrt(x))
    for ( int i = 0; i < 4; i++)
    {
        float x = (*pIn)[i];

        float sqrtx = sqrtf(x);
        float sqrt2x = sqrtf(sqrtx);
        float appx = 0.78f*sqrtx+0.22f*sqrt2x;
        float num = x*sqrt2x;
        float cuberoot = (2*appx+(x*sqrt2x)/(appx*appx))/3.0f - 0.00025f;
        if ( x < 0.00304f )
            x = 12.92f * x;
        else
            x = 1.055f*cuberoot-0.055f;
        (*pOut)[i] = x;
    }
}
```

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note

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# UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

pg 2 of 6

PATENT NO : 6,954,214 *B2*

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below: *In the drawings:*

*1* On Sheet 5 of 9, in FIG. 5, please replace "FIG. 5" with the following figure.

## FIG. 5

400

```
const __decispec(aligned(16)) __m128 Const039 = _mm_set1_ps(  
0.03928f);  
const __decispec(aligned(16)) __m128 ConstInv1292 = _mm_set1_ps(  
1.0f/12.92f);  
const __decispec(aligned(16)) __m128 Const1055 = _mm_set1_ps(0.055f);  
const __decispec(aligned(16)) __m128 ConstInv1055 = _mm_set1_ps(  
1.0f/1.055f);  
  
const __decispec(aligned(16)) __m128 Const1285 = _mm_set1_ps(  
1.285f);  
const __decispec(aligned(16)) __m128 Const0285 = _mm_set1_ps(  
0.285f);
```

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# UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,954,214

B2

Pg 396

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below: *In the drawings:*

1 On Sheet 6 of 9, in FIG. 6, please replace "FIG. 6" with the following figure.

401

FIG. 6

```
extern "C" void
sRGBColor( Color *pOut, Color *pln )
{
    // SIMD: compute BOTH answers and compose output using mask
    __m128 ansBelowDelta = _mm_mul_ps( (__m128 *) pln, ConstInv1292 );
    __m128 x = _mm_mul_ps( ConstInv1055, _mm_add_ps( (__m128 *) pln,
Const055 ) );
    __m128 sqrx = _mm_mul_ps( x, x );
    __m128 invsqrx = _mm_rcp_ps( sqrx );
    __m128 invsqrtr = _mm_rsqrt_ps( x );
    __m128 ansAboveDelta = _mm_div_ps( Const1285,
        _mm_mul_ps( invsqrtr, _mm_add_ps( Const0285, invsqrtr ) ) );
    __m128 TruelfLTDelta = _mm_cmplt_ps( (__m128 *) pln, Const039 );
    (__m128 *) pOut = _mm_or_ps( _mm_and_ps( TruelfLTDelta, ansBelowDelta
    ),
        _mm_andnot_ps( TruelfLTDelta, ansAboveDelta ) );
}
```

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,954,214 *B2*

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

*pg 4 of 6*

It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below: *In the drawings:*

*Note* <sup>1</sup> On Sheet 7 of 9, in FIG. 7, please replace "FIG. 7" with the following figure.

500

### FIG. 7

```

const __declspec(align(16)) __m128 CONST00304 = _mm_set1_ps( 0.00304f );
const __declspec(align(16)) __m128 CONST1292 = _mm_set1_ps( 12.92f );
const __declspec(align(16)) __m128 CONST055 = _mm_set1_ps( 0.055f );
const __declspec(align(16)) __m128 CONST1055 = _mm_set1_ps( 1.055f );

const __declspec(align(16)) __m128 CONST078 = _mm_set1_ps( 0.78f );
const __declspec(align(16)) __m128 CONST1m078 = _mm_set1_ps( 1.0f-0.78f );

const __declspec(align(16)) __m128 CONST38 = _mm_set1_ps( 0.38f );
const __declspec(align(16)) __m128 CONST1m38 = _mm_set1_ps( 1.0f-0.38f );

extern "C" void
LinearToRGBColor( Color *pOut, Color *pin )
{
    __m128 ansBelowDelta = _mm_mul_ps( (__m128 *) pin, CONST1292 );
    __m128 sqrtx = _mm_sqrt_ps( (__m128 *) pin );
    __m128 sqrt3x = _mm_sqrt_ps( _mm_sqrt_ps( sqrtx ) );
    __m128 pow124 = _mm_add_ps( _mm_mul_ps( CONST38, sqrtx ),
        _mm_div_ps( _mm_mul_ps( CONST1m38, sqrtx ), sqrt3x );
    __m128 ansAboveDelta = _mm_sub_ps( _mm_mul_ps( CONST1055, pow124 ), CONST055 );
    __m128 TrueIfLTDelta = _mm_cmplt_ps( (__m128 *) pin, CONST00304 );
    (__m128 *) pOut = _mm_or_ps( _mm_and_ps( TrueIfLTDelta, ansBelowDelta ),
        _mm_andnot_ps( TrueIfLTDelta, ansAboveDelta );
}

```

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# UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,954,214 *B2*

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

*pg 5 of 6*

It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

*Wilt*  
*In the drawings:*  
*1*

On Sheet 8 of 9, in FIG. 8, please replace "FIG. 8" with the following figure.

FIG. 8

```
500
1
const __decispec(algn(16)) __m128 Magic00304 = __mm_set1_ps( 0.00304f );
const __decispec(algn(16)) __m128 Magic1282 = __mm_set1_ps( 12.92f );
const __decispec(algn(16)) __m128 Magic055 = __mm_set1_ps( 0.055f );
const __decispec(algn(16)) __m128 Magic1055 = __mm_set1_ps( 1.055f );
const __decispec(algn(16)) __m128 MagicInv3 = __mm_set1_ps( 1.0f/3.0f );
const __decispec(algn(16)) __m128 MagicFudge = __mm_set1_ps( 0.00025f );

const __decispec(algn(16)) __m128 Magic078 = __mm_set1_ps( 0.78f );
const __decispec(algn(16)) __m128 Magic1m078 = __mm_set1_ps( 1.0f-0.78f );

const __decispec(algn(16)) __m128 Magic38 = __mm_set1_ps( 0.38f );
const __decispec(algn(16)) __m128 Magic1m38 = __mm_set1_ps( 1.0f-0.38f );

extern "C" void
LinearToRGBColor( Color *pOut, Color *pin )
{
    __m128 ensBelowDelta = __mm_mul_ps( (__m128 *) pin, Magic1282 );
    __m128 sqrtx = __mm_sqrt_ps( (__m128 *) pin );
    __m128 sqrt2x = __mm_sqrt_ps( sqrtx );
    __m128 appx = __mm_add_ps( __mm_mul_ps( Magic078, sqrtx ),
        __mm_mul_ps( Magic1m078, sqrt2x ) );
    __m128 cuberoot = __mm_sub_ps(
        __mm_mul_ps( MagicInv3,
            __mm_add_ps( __mm_add_ps( appx, appx ),
                __mm_div_ps( __mm_mul_ps( (__m128 *) pin, sqrt2x ),
                    __mm_mul_ps( appx, appx )
                )
            )
        ), MagicFudge
    );
    __m128 ensAboveDelta = __mm_sub_ps( __mm_mul_ps( Magic1055, cuberoot ), Magic055 );
    __m128 TruefLTDelta = __mm_cmplt_ps( (__m128 *) pin, Magic00304 );
    (__m128 *) pOut = __mm_or_ps( __mm_and_ps( TruefLTDelta, ensBelowDelta ),
        __mm_andnot_ps( TruefLTDelta, ensAboveDelta ) );
}
```

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,954,214 *B2*

DATED : Oct. 11, 2005

INVENTOR(S) : Wilt, et al.

*pg 696*

It is certified that error appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 3, line 5, delete "modern" and insert - - modem - -, therefor.

In column 3, line 32, delete " $x^{1/24}$ " and insert - -  $x^{1/2.4}$  - -, therefor.

In column 6, line 63, delete " $X^{1/2.4} = \sqrt[3]{X^{1.25}}$ " and insert - -  $x^{1/2.4} = \sqrt[3]{x^{1.25}}$  - -, therefor.

In column 6, line 64, after "which" insert - - can be - -.

In column 8, line 1, delete " $x^{05}$ " and insert - -  $x^{0.5}$  - -, therefor.

In column 8, line 40, delete "un-altered" and insert - - unaltered - -, therefor.

In column 12, line 6, in Claim 8, after "having" delete "in" and insert - - an - -, therefor.

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*09/18/03*

*Note*